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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/744,645	08/22/2001	Iancu Lungu	RICHTER-3950	2685

7590 08/06/2004
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EXAMINER

RO, BENTSU

ART UNIT PAPER NUMBER

2837

DATE MAILED: 08/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/744,645

Applicant(s)

LUNGU, IANCU

Examiner

Bentsu Ro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 15, 18 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 4-14, 16, 17, 19 and 23-32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

SECOND OFFICE ACTION ----- A FINAL REJECTION

1. The substitute specification, the abstract, and the formal drawings filed on June 4, 2004 are acceptable.
2. Claims 1-3, 15, 18, 20, 21 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Lungu US Patent No. 6,262,510. (This is the same reference cited by the examiner in the first office action.)

The following chart compares the claims with Lungu's 6,262,510 patent teaching.

<u>The claims:</u>	<u>Lungu 6,262,510 patent teaching:</u>
Claims 1 and 2.	The examiner maintains the same rejection as that of the first office action, applicant is therefore referred to the first office action, paragraph 8 for the details.
3. Method for power control according to claim 2, wherein the speed control and limitation takes place in that the delay is independent from the number of revolution.	the motor speed is controlled by controlling gate voltage so as to control the switching time of the power transistor, see column 6, lines 30-32; the delay time is controlled by the switching off and switching on of the transistor; both the gate voltage and the switching off/on are independent from the number of rotor revolution.

<p>15. Method for power control according to claim 2, wherein the control of the digital phase commutation is derived from the recognition of the phase position of an analog signal</p> <p>which can be phase-shifted if need be.</p>	<p>Fig. 6c shows a Hall sensor 31 for sensing the phase position; the Hall sensor 31 can be a digital sensor (see column 8, line 10) or an analog sensor or a combination of both;</p> <p>the position of the Hall sensor 31 can be shifted if needed, see column 8, lines 13-20.</p>
<p>18. Method of power control according to claim 2, wherein the control functions of the machine are carried out by means of a differential Hall sensor,</p> <p>this Hall sensor being directly triggered by teeth of a rotor of the machine.</p>	<p>the Hall sensor 31 (and most Hall sensors) is a differential type in that it senses the change of magnetic flux so that its output changes;</p> <p>the Hall sensor 31 is triggered by the magnetic flux changed in the rotor pole 121 when the rotor pole rotates, see Fig. 1;</p> <p>the rotor pole is constructed in a type of teeth extended outward from the yoke 123, see Fig. 1.</p>
<p>20. Method for power control according to claim 1, wherein two-phase reluctance machines which consist of two angle-offset, independently operative machine halves,</p> <p>characterized in that the bypass current from the phases of a machine half is transmitted to the phases of the other machine half.</p>	<p>Figs. 6b and 6c show two-phase reluctance machine with angle offset and independently operative windings 112x, 112y, 113x, 113y; the windings 112x, 112y constitute one-half of the machine whereas the windings 113x, 113y constitute another half of the machine;</p> <p>the switching off current from one phase is transmitted to the next phase by the coupling diodes 22, see text and Figs. 6a-6c, for example.</p>
<p>21. Method for power control</p>	<p>Fig. 5b shows a pulse width modulation</p>

according to claim 1, wherein the main current is interrupted in any position within the phase duration for a short time.	wherein the "L" represents the switch conduction and "1" represents the switch interruption for a short time, see column 7, lines 30-31.
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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lungu in view of Nashiki US Patent 6,081,083. (Nashiki 6,081,083 patent is a new reference.)

Regarding claim 22, Lungu does not teach a starting current control. However, a starting current control for a switched reluctance motor is taught by Nashiki.

Nashiki Fig. 3 shows a SR motor control including current sensors (no reference numeral) for sensing the motor current of all phases. The sensed current signal is used to control the PW circuit for pulse width modulation. The current is controlled all the times, including at the starting.

In view of Nashiki's teaching, it would have been obvious to a skilled person in the art to add the current control feature of Nashiki to the Lungu's circuit to achieve the same subject matter as claimed.

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Why ??? Adding Nashiki's current control feature will prevent the motor from overcurrent. An overcurrent motor may damage the motor windings and/or the power transistors. By adding the motor current control, the motor overcurrent will be prevented, thus, reduce the change of motor damage or power transistor damage.

5. Claims 4-14, 16, 17, 19, 23-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Applicant's remarks have been fully considered but they are not convincing. Applicant's arguments and the examiner's responses are listed below.

Applicant's argument:

The '510 patent, in Figs. 6a-c, represent motors without any power control whatsoever.

Examiner's response:

This argument is absolutely not convincing. Applicant should note that a power control does not need a fancy or sophisticated control structure, a simple flip of a switch is a power control. Thus, Lungu's Figs. 6a-c include MOSFETs 21x and 21y, which MOSFETs are used for power control.

Applicant's argument:

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In the amendment page 38, at the middle of first full paragraph, applicant argues that

"Figure 6e of the '510 patent is related to a power control through reduced duty cycle of power switches 21. However, (to the end of page 38, second full paragraph of the amendment.)

Examiner's response:

Applicant should see other figures which do not have the power transistors 211. Most importantly, the examiner has never mentioned Fig. 6e in the rejection, instead, the examiner uses Figs. 6a and 6b in the rejection. See first office action, paragraph 8 and the chart therein.

Applicant's argument:

Starting on page 38, last three lines through page 39, line 5, applicant argues that "predetermined delay" does not refer to any angular position of this delay referred to as the phase angle, recited in claims 1 and 2.

Examiner's response:

As the examiner understand, the description in column 11, lines 4-6 and the switching operation (or commutation) of a motor, the delay occurs between one winding is switched off and the next winding is switched on. The switch on and switch off of the windings are all related to the phase control (or commutation). Therefore, the delay time is related to the phase commutation i.e. after the switching off of the first winding.

Applicant's argument:

On page 39, the first full paragraph.

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Examiner's response:

The examiner has never mentioned Fig. 6e in the rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication should be directed to Bentsu Ro at telephone number (571) 272-2072.

8/5/04



Bentsu Ro
Senior Examiner
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